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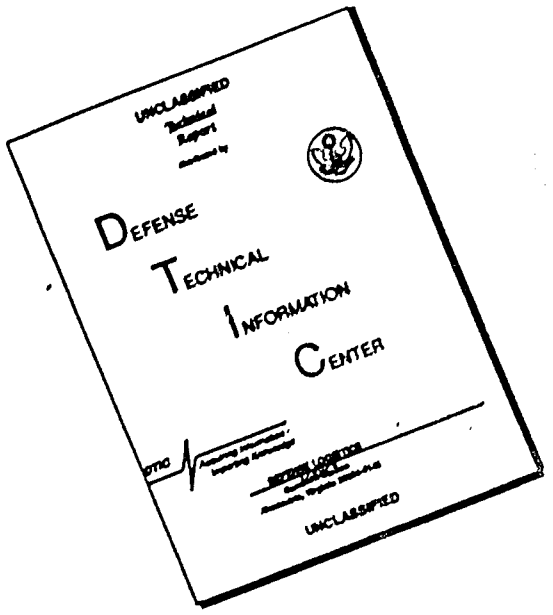

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WASHINGTON, D.C. 20310

IN REPLY REFER TO
AGAM-P (M) (26 Jul 68) FOR OT RD 682116 5 August 1968

SUBJECT: Operational Report - Lessons Learned, Headquarters, 588th Engineer Battalion (C)(A), Period Ending 30 April 1968

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Kenneth G. Wickham

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 588TH ENGINEER BATTALION (C)(A)
APO SF 96216

EBB-OPNS 15 May 1968

SUBJECT: Operational Report - Lessons Learned (RCS-CSFOR-65) for the Quarterly Period Ending 31 April 1968

THRU: Commanding Officer
79th Engineer Group (Const)
APO SF 96491

Commanding General
20th Engineer Brigade
ATTN: AVBI-OPN
APO SF 96491

Commanding General
United States Army, Vietnam
ATTN: AVHGC-DH
APO SF 96307

Commander-in-Chief
United States Army, Pacific
ATTN: GPOP-OT
APO SF 96588

TO: Assistant Chief of Staff for Force Development
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FOR OT RD
682116

EBR-OPNS 15 May 1968

SUBJECT: Operational Report - Lessons Learned (RCS-CSFOR-65) for the Quarterly Period Ending 31 April 1968

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SECTION 1: Significant Organization or Unit Activities

1. GENERAL

a. The 588th Engineer Battalion (Combat)(Army) is organized under TOE 5-35E. The battalion has a Headquarters and Headquarters Company and four combat line companies. The 362d Engineer Company (Light Equipment) is attached for all purposes and is organized under TOE 5-57D.

b. The battalion is organic to the 79th Engineer Group which is located at Long Binh. Operational Support missions are assigned by II Field Forces.

c. Headquarters and Headquarters Company, Company A, Company B, Company D, and the 362d Engineer Company (Light Equipment) are located at Tay Ninh Base Camp, RVN (XT 143518). Company C is located at Dau Tieng Base Camp, RVN (XT 455475).

d. At the beginning of the quarter the battalion was engaged in Operation Yellowstone in support of the 25th Infantry Division since 7 December 1967. The last battalion elements returned from the operation on 23 February 1968 and resumed base camp construction projects and maintenance and upgrading of LOC's.

(1) Company A was located at Thien Ngon RVN (XT 085816) during Operation Yellowstone until 23 February 1968. The company then returned to Tay Ninh and remained for the rest of the quarter.

(2) Company B was located during Operation Yellowstone at French Fort (XT 282680) until 9 February 1968, and then at Thien Ngon until 23 February 1968. The company returned to Tay Ninh and remained for the rest of the quarter. One platoon returned to French Fort for further road work from 23 April 1968 until 27 April 1968.

(3) Company C was located at Katum (XT 333899) during Operation Yellowstone until 18 February 1968. The company then returned to Dau Tieng and resumed base camp construction and LOC maintenance.

(4) Company D was located at Katum during Operation Yellowstone until 18 February 1968. The company returned to Tay Ninh and resumed base camp construction and LOC maintenance. One platoon laagered at XT 295501 from 18 April 1968 until 21 April 1968 to provide LOC maintenance

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on Route 26. Another platoon displaced to Cu Chi (XT 660150) on 27 March to keep the MSR between Tan Son Nhut and Trang Bang open. At the close of the quarter the platoon was still located at Cu Chi. Another platoon laagered at XT 512191 from 23 April to work on Route 22 and Route 1 between Go Dau Ha and Trang Bang. At the close of the quarter the platoon was still at the same location.

(5) Headquarters Company and the 362d Engineer Company (Light Equipment) had elements and equipment at all field locations and at Tay Ninh during the operation. All elements returned to Tay Ninh with the close of Operation Yellowstone.

e. Attachments:

(1) One platoon from the 104th Engineer Company (DT) was located at French Fort until 9 Feb 68.

(2) One platoon from the 104th Engineer Company (DT) was located at Katum until 17 February 1968.

(3) One section of C Battery, 6/77th Artillery, was located at Thien Ngon until 23 February 1968.

2. COMMAND:

a. The 588th Engineer Battalion was commanded until 20 February by LTC Frederick G. Rockwell Jr, and from that date until the present by LTC Coleman C. Clement, Jr. SGM Edward J. Kirby served as sergeant major throughout the period.

b. Other personnel assignments:

POSITION	NAME	PERIOD
Bn XO	Maj Bill D. Cotton	1 Feb - 6 Apr
	Maj Cecil D. Clark	7 Apr - 31 Apr
CO, HHC	1LT Andrew C. Lattu	1 Feb - 23 Mar
	1LT Kevin Dugan	24 Mar -23 Apr
	1LT Arthur R. Goodale	24 Apr -31 Apr
CO, Co A	CPT Andrew B. Seidel	1 Feb - 9 Mar
	1LT Martin H. Goedecke	10 Mar - 31 Apr

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CO, Co B	CPT John T. Hardy, Jr.	1 Feb - 6 Feb
	1LT Timothy Richards	7 Feb - 31 Apr
CO, Co C	CPT Charles F. Porter	1 Feb - 18 Apr
	CPT Larry M. Pigue	19 Apr - 31 Apr
CO, Co D	CPT Larry M. Pigue	1 Feb - 14 Apr
	1LT Edward T. Maguire	15 Apr - 31 Apr
CO, 362d Engr Co (LE)	CPT David G. Weise	1 Feb - 12 Mar
	1LT James R. Parker	13 Mar - 31 Apr

3. PERSONNEL, ADMINISTRATION, MORALE AND DISCIPLINE:

a. Personnel:

(1) The battalion, including the 362d Engineer Company, had an average overall strength of 82% during the quarter. Losses for May are 1 officer and 46 EM, for June are 1 Officer and 32 EM, and for July are 7 Officers and 39 EM. It is anticipated that these vacancies will be filled as they occur and that the overall strength will remain above 90% throughout the next quarter.

(2) The authorized officer strength is 41 commissioned and 4 warrant officers. The average assigned officers strength was 36 commissioned and 3 warrant officers.

(3) Nine persons reenlisted during the quarter. It has been found during reenlistment interviews that many who wish to reenlist would rather do so after rotating.

(4) Replacements arrive at 79th Engineer Group and transportation to this location is arranged by the battalion. Small groups may be sent on the courier helicopter; large groups are transported by convoy, or by fixed wing aircraft when arrangements can be made. When replacements must be transported by convoy, they are furnished with weapons, ammunition, flak vests, helmets, and are given a briefing on convoy and ambush procedures.

b. Administration:

(1) During the period, battalion elements have been located at six different field locations and at four different permanent locations. Communications with all locations by radio has been possible by using the battalion relay station on Nui Ba Den Mountain. Land line communications have been possible at some field location through VHF transmission. A direct VHF "hot line" to 79th Engineer Group permits land line communications, but considerable administrative traffic is sent by radio.

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(2) A daily courier helicopter is used by the battalion for command and control and for reconnaissance missions. The helicopter arrives daily from 79th Engineer Group in Long Binh with distribution material and personnel. Mail, pay, spare parts and personnel are taken to field locations by this helicopter. In addition, a fixed wing courier flight between 20th Engineer Brigade elements arrives several times a week.

(3) The battalion chaplain holds weekly religious services and counseling in the field and at permanent locations.

(4) The battalion surgeon maintains an aid station at Tay Ninh and furnishes medics to units when they are in the field or at other permanent locations.

c. Morale:

(1) The high morale of the men of the battalion is indicated by extensions of foreign service tours. Over 37 men have extended their tours during the quarter to serve with the battalion and the 362d Engineer Company (IE).

(2) The battalion operates a photo crafts shop for off duty use by all personnel. Funds are obtained through Special Services.

(3) A nightly movie is shown in the battalion outdoor theater. Live floor shows are also available periodically.

(4) The battalion receives unit newspapers from the 25th Infantry Division, USAECV(P), and USAMV. The Pacific Stars and Stripes is received daily on the courier helicopter. Special Services paperback books and the Army Times Weekly are also received.

d. Discipline: There were no General, 2 Special, and no Summary Courts-Martial held during the quarter. Charges included possession of marijuana, disobeying an NCO, using disrespectful language toward an NCO, and breaking restrictions. There were 44 infractions of various kinds for which punishment under Article 15, UCMJ was administered.

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e. Awards: The following awards were presented during the period:

LOM - 1 (CPT Robert T. Howard)

BS (V) - 3

BS - 21

ACM (V)- 7

ACM - 23

PH - 75

4. INTELLIGENCE AND COUNTERINTELLIGENCE:

a. This headquarters receives daily intelligence summaries from the 1st Brigade, 25th Infantry Division, the MACV unit at Tay Ninh East, and from the Tay Ninh Province Chief's Office. Spot reports, intelligence summaries, and terrain studies are received from II Field Force.

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b. Engineer reconnaissance of bridges, roads, culverts and airfields is performed regularly by vehicle and by helicopter by the battalion reconnaissance section. Results are reported to 79th Engineer Group, 1st Brigade, 25th Infantry Division, and the 65th Engineer Battalion, which is organic to the 25th Infantry Division.

c. Several mines, booby-traps, and enemy munitions have been reported to battalion elements by Vietnamese civilians. Rewards of C-rations, candy, food, and cigarettes have been given for such information. Plans are being developed for a battalion monetary reward program utilizing an imprest fund.

d. Laterite sources for use in LOC maintenance and upgrading were located at XT 385430 and at XT 430270 by exploration with dozers.

e. It was discovered during Operation Yellowstone that a VC sapper team used a dog to warn of ambush at night. This team frequently mined the laterite pit at XT 284617. Whenever an ambush was laid, the dog warned the VC and the team turned around, as shown by tracks the next morning on the road. On nights when no ambush was prepared, the dog checked the entire pit before the VC laid the mines. No attempt was ever successful in ambushing the team because of the dog's warning.

f. It is planned in the future to have a Vietnamese interpreter and some popular force troops accompany engineers to work sites. These personnel will be useful in obtaining intelligence from local civilians.

5. PLANS, OPERATIONS AND TRAINING:

a. Base Construction Support: At the beginning of the period the battalion was concluding its effort toward Operation Yellowstone and was expending only 5% of its effort on base construction. Upon returning to the base camps at Tay Ninh and Dau Tieng, work was performed on the projects listed below. At the close of the period 40% of the battalion effort went toward base camp construction.

(1) Tay Ninh, Vietnam Area:

(a) 4002 Man Cantonment (CD 66-171DC-79th Engineer Group):

This project provides for a cantonment for the 1st Brigade, 25th Infantry Division, and supporting organizations. Much of the work is on a self-help basis, especially EM billets. During the period, 18,320 cm of laterite was hauled and placed for roads and building hardstands; 23 each 20 x 48 concrete building pads were poured; 3300 m of ditch was cut; 3900 m of road was upgraded; 300 linear feet of culvert was placed; and 20 each 20 x 48 EM billets were completed. The project was 62% complete at the start of the quarter and 79% complete at the end.

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(b) MUST Hospital (CD 66-212DC-79): This project provides for hardstands for inflatable rubberized buildings, 20,640 square feet of billets and services buildings. During the period 205 cu of laterite was hauled and spread for building hardstands. 3 each 20 x 48 billets were constructed (self-help), 5 each 20 x 48 concrete pads were poured, and 1350 gallons of RC-800 was spread for a helipad. The project has gone from 30% complete at the start of the period to 45% at the end.

(c) Nui Ba Den Signal Facility (CD 12-224-01-T-7S): This project provides for a 122-man cantonment and signal facility on top of Nui Ba Den (Black Virgin Mountain). The project was 25% complete at the beginning of the period and is now complete.

(d) Pagoda Rehabilitation, Nui Ba Den (CD 12-236-01-T-MA):

This project provides for modifications to a pagoda on Nui Ba Den mountain, to be used as part of the signal facility there. The project was started and completed during the period.

(e) AN/MTC Switchboard Bunker (CD 20-017-67): This project provided for construction of a communications switchboard bunker. The project was started and completed during the quarter.

(f) Water Well Fill Points (CD 75-203-01-T-7S): This project is to provide five potable water well fill points for Tay Ninh Base Camp. Each fill point includes a steel tank and tower, pumps, water purification unit and fill stands. Point #1 was 10% complete on 1 Feb 68 and is now complete; point #2 is 78% complete and point #3 is 30% complete. Points #2 and 3 were started during the period; points #4 and 5 have not been started.

(g) Logistical Storage Area (CD 75-208-10-T-6A): This directive provides continuous upgrading and improvements of an ammunition storage area. During the quarter 1830 cu of laterite was hauled for upgrading 3350 meters of road, and 4400 meters of ditch was cut. The project progressed from 40% to 100% complete this period.

(h) Aviation Support Facilities (CD 75-205-03-T-6S): This project provides for a maintenance hangar and administration buildings. The project was started this quarter and stands at 19% complete.

(i) IWCS Site (CD 75-207-04-T-PE): This project was completed this period. Final work consisted of emplacing three underground fuel storage tanks.

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(j) Flight Control Tower (CD 75-211-03-T-6S): This project is in planning stages at present. It provides for a 44 foot high aircraft control tower.

(k) Aviation Cantonment Facilities, (CD 75-212-01): This project provides for shops, administration buildings, billets, and clubs. It has been delayed pending availability of engineer construction effort.

(2) Dau Tieng, Vietnam Area:

(a) 1500 Man Cantonment (CD 12-203-01-T-6S): This project provides for a base camp for the 3rd Brigade, 25th Infantry Division, and supporting organizations. During the period, 2,900 cm of laterite was hauled for hardstands and roads, three 20 x 48 and four 20 x 60 buildings were completed, 27 concrete building pads were poured, and 141 linear feet of culvert was installed. The project progressed from 52% complete to 70% at present.

(b) Water Well Fill Points (CD 12-223-01-T-7S): This project is similar to the Tay Ninh project. Four fill points are planned; at the end of the period, point number one was 97% complete and number two was 92% complete.

b. Lines of Communication Support: During the quarter, battalion effort expended on lines of communication varied between 0% and 48%. At the end of the quarter this effort was 21%. During the period, work was performed on the following LOC's:

(1) Route TL-4:

(a) During Operation Yellowstone, the road was maintained and upgraded from Tay Ninh to Katum. This mission included a daily minesweep of 26 KM of the road. Battalion minesweep teams working south from Katum and north from French Fort destroyed 8 mines during the period. Also during Operation Yellowstone, 7,265 cm of laterite and 345 cm of rock was used to upgrade 8,850 meters of roadway. A timber trestle bridge and a AVLB bypass site was built at Katum to replace a Bailey Bridge extracted from that location.

(b) Following Operation Yellowstone, the battalion retained responsibilities for maintenance of Route TL-4 from Tay Ninh to French Fort. During the period following the operation, 965 cm of laterite and 125 cm of rock were used to upgrade 1700 meters of road and to backfill four culverts placed. 200 meters of brush were cleared around culvert sites for security. One platoon returned to French Fort from 23 April until 27 April to perform road maintenance.

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(2) Route QL-22:

(a) From 1 February until 23 February during Operation Yellowstone, the battalion provided daily minesweep and road clearing from Thien Ngon base camp to the laterite pit on the Soui Ky River at XT 098763. During this period 15 enemy mines were discovered and destroyed.

(b) Following the completion of Operation Yellowstone, the battalion assumed responsibility for upgrading and maintaining QL-22 from Tay Ninh to Go Dau Ha. During the period 24 February until 30 April 1968, 850 cm of laterite and 320 cm of rock were used to upgrade 600 meters of road.

(3) Routes 239 and LTL 26: During this quarter the battalion has upgraded and maintained these routes between Dau Tieng and Tay Ninh, including a daily minesweep of the road. During the quarter, seven road blocks were removed, four culverts and six other craters were blown, seven mines were detected and destroyed, 13 culverts were emplaced, and 33,460 cm of laterite were used to repair road interdictions and to upgrade the road. Particular emphasis has been placed in raising the level of the laterite road causeway leading west from Dau Tieng across the flood plain of the Saigon River.

(4) Route QL-1: On 27 March one platoon displaced to Cu Chi and came under the Operational Control of the 554th Engineer Battalion (Construction). This platoon assumed the mission of mine-sweeping, clearing, and maintaining Route QL-1 from Tan Son Nhut to Trang Bang on a daily basis. On 23 April another platoon moved to a field position one kilometer east of Trang Bang and laagered there for the remainder of the quarter. This platoon assumed the task of minesweeping, clearing, and maintaining Route QL-1 from Go Dau Ha to Trang Bang. During the quarter on QL-1 25 booby-traps and 23 road blocks were destroyed, 2,265 cm of laterite and 495 cm of crushed rock were used to fill 11 craters and to upgrade and maintain portions of the road.

(5) Rock Quarry and Crusher Site, At south base of Nui Ba Den Mountain:

Crushed rock produced at this site is used for base camp construction and for LOC upgrading and maintenance. During the quarter 3,205 cm of 3/4" rock was crushed, 2,880 cm of 1½" rock was crushed, 14,155 cm of 3" rock was crushed, and 32,018 cm of blast rock was produced.

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c. Operation Support:

(1) Operation Yellowstone: The battalion provided Direct Support to the 25th Infantry Division on Operation Yellowstone at the beginning of the quarter. The After Action Report is attached as Inclosure 1. One squad remained at Thien Ngon until 18 March and applied 10,000 gallons of RC-800/diesel mix to the airfield. One squad moved to Katum on 20 March and applied 16,900 gallons of RC-800/diesel mix to the airfield. Two D6 dozers were used to push the berm of the Special Forces camp to a greater height and to level areas adjacent to the camp.

(2) Artillery Positions, Tay Ninh (Operational Support Mission 588-1): This directive provides for four Artillery gun pads and four ammunition bunkers. The project was begun this quarter, has utilized 770 cm of laterite and 130 cm of 3 inch rock, and is 25% complete.

(3) Helicopter Revetments: This mission involved surface treatment of helicopter landing areas for the 3/17th Air Cavalry Squadron and for the 187th Assault Helicopter Company and also construction of 19 individual UH-1 helicopter revetments and three large maintenance revetments. The mission was started and completed during the quarter.

(4) Special Forces Camp, Tay Ninh East (Operational Support Mission 588-5): This project provides for a motor park, a dispensary and an administrative/supply building. The project is to be a self-help project. The mission was started during this quarter and is 5% complete.

(5) Bailey Bridge Repair: This mission involved replacing bridge members damaged by Viet Cong demolitions at XT 238513. The bridge parts had been spot welded to prevent theft by local civilians and a cutting torch had to be used to disassemble the damaged parts.

(6) Cao Xa Bypass Road: An access road to the laterite pit west of Tay Ninh at XT 105505 was built so as to bypass the village of Cao Xa. The road was completed during the period.

d. Training:

(1) Surveying: A five day surveying course held at Long Binh was attended by three men from the battalion this quarter.

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(2) Weapons: Companies conduct mandatory classes in operations, care and safety of all TOE weapons. All personnel fire assigned individual and crew served weapons monthly. Unit armorers attended a training course sponsored by 20th Engineer Brigade on the operation and maintenance of the M16 rifle this quarter.

(3) Combat Leader's Course: This unit received allocations for the course from the 25th Infantry Division when available.

(4) Quality Control: Two battalion personnel attended a course in Long Binh dealing with quality control as applied to soils, pavements, and concrete.

(5) All personnel receive monthly training in personal hygiene, preventive maintenance, and character guidance.

6. LOGISTICS:

a. All classes of supply including construction materials are requisitioned through the 228th Supply and Service Company at Tay Ninh. Bills of Material for MCA projects are approved by the 79th Engineer Group before issue. Materials for operational support missions are also requisitioned through the 228th S&S Company.

b. Class I, III and V supplies were issued at Katum by the 228th S&S Company during Operation Yellowstone.

c. Equipment and supplies for the battalion which arrive at the 79th Engineer Group at Long Binh are picked-up and transported to Tay Ninh by vehicles sent by the battalion. Construction materials are obtained from Long Binh in the same manner when a shortage exists at Tay Ninh.

7. FORCE DEVELOPMENT: None

8. COMMAND MANAGEMENT:

a. Projects and missions assigned to the 588th Engineer Battalion are supervised by the Battalion Commander under the staff operational management of the S-3 Officer. The S-2 and the S-3 Sections operate together to plan and manage projects and missions. Equipment resources of organic and attached companies are allocated daily to insure efficient utilization.

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(1) Base Development Planning: Base construction policies are established by a base development planning board under the supervision of the Post Commander. This headquarters implements the policy within the framework of MCA (Military Construction Army) and OMA (Operations and Maintenance Army) funded project directives. Management of projects in progress which are constructed on a self-help basis, such as troop billets, is further implemented by strict control of issued materials. An engineer NCO supervises all self-help construction.

(2) Preconstruction Project Briefings: Before initiation of construction, a project briefing is given the Battalion Commander and the Operations Officer by the Company Commander and Platoon Leader assigned. This briefing is to discuss completely all aspects of the proposed construction and to permit comments and changes to be made prior to its initiation.

(3) Job Site Briefing: The senior person present at a job site is prepared to brief visitors on the construction progress.

(4) Management Techniques: Daily operations meetings are utilized to allocate equipment and to program construction for the coming day. Management indicators used in committing effort and controlling progress include daily troop disposition reports, equipment deadline reports, weekly project status reports, project completion reports for construction projects, and after action reports for operational support missions.

b. Indigenous Personnel: Vietnamese civilian labor is hired through a battalion civilian personnel officer. The Executive Officer of Headquarters Company handles this as an extra duty. The civilian personnel officer obtains laborers through a Vietnamese office clerk who arranges employment in the nearby towns. At the end of the quarter the battalion was employing 160 daily hire workers (laborers), and 100 permanent hire workers on various projects, (carpenters, K.P.'s, tire changers, and latrine orderlies).

SECTION II - Commanders Observations and Recommendations

1. Personnel: None

2. Operations:

a. Expedient Overhead Cover:

(1) DISCUSSION: Engineer troops in the field need a type of overhead cover that can be constructed quickly and offer maximum protection. Most enemy harassment of this battalion's troops in the field has been mortar attacks after dark.

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(2) SOLUTION: The most expedient shelter built by this battalion is constructed as follows: a three to seven foot deep hole is dug by a dozer, the depth depending on the season and the terrain. 4 x 4 timbers are used for roof stringers and interlocked M8A1 matting is laid over the 4 x 4's. Two layers of sandbags are placed over the matting. Several bunkers of this type have withstood direct hits by 82mm mortars with only slight or no casualties to occupants. The matting is fully recoverable after use as shelter covering.

b. Vehicle Protection:

(1) DISCUSSION: Most damage to vehicles from mortars is to tires and radiators.

(2) SOLUTION: During dry weather, the most effective vehicle protection in the field is afforded by digging the vehicles in with a dozer deep enough to protect the radiators and tires. In wet weather, parking vehicles nose to nose, or against an earth bank or another vehicle will protect the radiator to some extent. Tires may be protected by a sandbag wall large enough to shield each tire.

c. Indicators of Enemy Activity:

(1) DISCUSSION: Some enemy mines are non-metallic and difficult to detect.

(2) SOLUTION: It has been noticed by mine sweep teams that there is no civilian traffic when the VC have mined the road. Minesweep teams must be especially alert when no civilian traffic is seen on any portion of road, or when the civilian traffic makes detours. It was also noticed before a recent ambush that no children were playing in the area, as was usual. Absence of children may also be a danger sign.

d. Surface Treatment with RC-800:

(1) DISCUSSION: While surfacing the dry, dusty Thien Ngon airstrip, it was noticed that the RC-800 did not penetrate the surface, even though heated to a water-like consistency. The RC-800 balled up, failed to penetrate, and stuck to vehicle tires passing over the surface.

(2) SOLUTION: The RC-800 was spread undiluted because of a shortage of diesel fuel. When diesel became available, the RC-800 surface was shot again with 100% diesel. The RC-800 on the surface then began to penetrate. Afterward, all surface treatment was made with a mixture of RC-800 and at least 50% diesel, which made better penetration.

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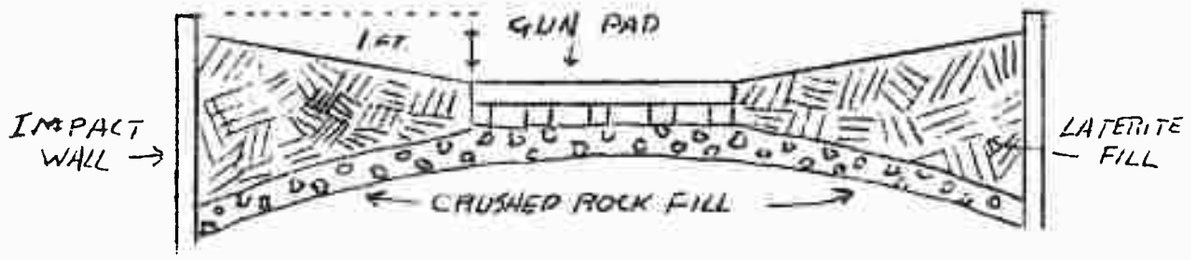
e. Draining Artillery Gun Pads:

(1) DISCUSSION: The one foot high impact wall required around gun pads causes water to be trapped on the gun pad, rotting the wood.

(2) SOLUTION: A six inch layer of rock was placed under the gun pad and sloped down and out away from the pad. The rock was rolled with a 50 ton roller, making it easier to level the sleepers for the pad. The rock allowed water to seep down and away.



f. Culvert Headwall Protection:

(1) DISCUSSION: Operators of large equipment have a difficult time seeing culvert headwalls when making a turn.

(2) SOLUTION: Driving a long, U-shaped picket in the ground at each end of the headwall and placing a used six-foot artillery cannister on top of the picket marks the culvert for operators. Painting the cannister yellow increases its visibility.

g. Quarry Operations:

(1) DISCUSSION: Push arms and track frames will crack if D7E tractors are used to dig boulders from the side of a quarry face in a boulder type quarry.

(2) SOLUTION: Explosives should be used to extract the rock. Using trackdrills to place dynamite in snakehole patterns is a common method of extracting rock from the quarry face. In slide areas, sandbags filled with dynamite and placed behind boulders will yield a large amount of rock and prevent overhang. Large boulders can be split by either shaped charges or pneumatic rock hand held drills.

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h. Work Area and Drainage in Maintenance Revetments:

(1) DISCUSSION: The construction of three-sided maintenance revetments requires that special consideration be given to drainage and to the establishment of a suitable work site for mechanics and repairmen.

(2) SOLUTION: M8A1 matting can be used to provide a suitable flooring for the work area and if inclined slightly toward the opened end will insure proper drainage.

3. Training:

a. Radio Procedures Training:

(1) DISCUSSION: In tactical situations, it may become necessary for personnel unfamiliar with use of radios to call for medical evacuation, artillery and airstrikes, or infantry assistance.

(2) SOLUTION: All personnel should receive periodic instruction in the use of various radio equipment, correct radio procedure, proper procedure for calling for air or artillery strikes, and procedure for calling in medical evacuation helicopters. Personnel should be made familiar with frequencies or security, air, artillery, and medical units and their call signs.

b. Weapons Training:

(1) DISCUSSION: In a tactical situation it may become necessary for personnel to use weapons unfamiliar to them.

(2) SOLUTION: All personnel should be cross-trained in the use of all weapons organic to the organization.

4. Intelligence: See Inclosures 1 through 3.

5. Logistics: None.

6. Organization: Light Equipment Company Communications.

a. DISCUSSION: Light Equipment Companies operating in combat areas have a communications problem. Under TOE 5-54D, the light equipment company is authorized AM series radios. All combat elements operate FM series. AM and FM radios cannot communicate with each other.

b. SOLUTION: The 362d Engineer Company (Light Equipment) has requested a change in TOE to allow FM series radios.

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7. Maintenance:

a. Intake hose:

(1) DISCUSSION: The intake hose at the turbocharger on 5-ton multifuel engines works loose, allowing contaminated air to enter the engine. The intake hose come from the factory with one clamp and with the other end glued.

(2) SOLUTION: The problem is alleviated by fastening another clamp, FSN 4730-542-3268, at the glued coupling.

b. Vibrating Grizzly on 75TPH Jaw Crusher:

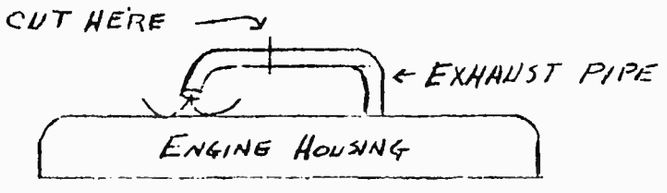
(1) DISCUSSION: Through normal use, the vibrating grizzly on the primary crusher of a 75 TPH crushing and screening plant will wear until it requires either replacement or rebuilding.

(2) SOLUTION: When replacement parts are not available and rebuilding is required, many locally available materials can be used. Unserviceable push arms when properly cut make excellent cross members. Worn Chicago pneumatic drill steel can be used as bars but require frequent welding repair. A substitute for the bars is a ½ inch steel plate with slits cut in it and fastened directly to the cross members.

c. Grader Exhaust:

(1) DISCUSSION: The exhaust system of the Laterneau Westinghouse grader blows heat and dust onto the engine housing and up into the operator's face when operating in reverse.

(2) SOLUTION: Cut the exhaust pipe as shown in drawing.



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8. Religious Services:

a. DISCUSSION: It is somewhat difficult to contact individuals to stimulate an interest in religious services in a non-static tactical situation.

b. SOLUTION: To encourage attendance at worship services, all newly assigned personnel are interviewed by the Battalion Chaplain, and worship service schedules are publicized at formations, on company bulletin boards, and in the Daily Bulletin. Special interest was accomplished by having each company sponsor the worship service on different weeks in their mess hall, due to the lack of a chapel. It has also been noticed that attendance at services increases after any enemy contact or mortar attacks.

9. Communications: Antenna for AN/GRC - 106

a. DISCUSSION: In setting up an AN/GRC-106 net with a station 65 miles away, the 15 foot whip halfwave antenna would not receive or transmit the required distance. A voice net was attempted initially but no contact could be made using the 15 foot whip or center fed doublet. Attempts to raise the whip to a height of 40 feet still gave negative results.

b. SOLUTION: The 15 foot whip, being a halfwave antenna, is fed from the bottom and gives a quarter wave of itself. In order to receive the benefit of the other quarter wave, the antenna was lowered to a height of six feet and an aluminum reflector was attached to the base. The required quarter wave was gained and contact was established with the other station.

4 Inclosures:

Incl 1, 2, and 3 -.
Mine Reports

Incl 4 - After Action Report-
Operation Yellowstone

COLEMAN C. CLEMENT JR.
LTC, CE
Commanding

21

EGE-3 (15 May 68) 1st Ind
SUBJECT: Operational Report - Lessons Learned (RCS-CSFOR-65) for the Quarterly Period Ending 31 April 1968

DA, HEADQUARTERS, 79TH ENGINEER GROUP, APO 96491, 20 May 1968

TO: Commanding General, 20th Engineer Brigade, ATTN: AVBI-OPN, APO 96491

The Operational Report of the 588th Engineer Battalion (C) for the period ending 30 April 1968 has been reviewed. It is considered to be an adequate summary of the battalion's operational experience during that period.

ROBERT E. CROWLEY
LTC, CE
Commanding

22

AVBI-OS (15 May 68) 2nd Ind
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for the Quarterly Period Ending 30 April 1968.

DA, HEADQUARTERS, 20TH ENGINEER BRIGADE, APO SF 96491 15 JUN 1968

TO: Commanding General, USARV, ATTN: AVHEN-MO, APO 96375

1. Submitted in accordance with USARV Regulation 525-15, dated 13 April 1968.

2. This headquarters concurs with the ORLL submitted by the 588th Engineer Battalion (Combat) except Section II, paragraph 7c, "Grader Exhaust": Nonconcur. An EIR should be submitted in accordance with existing regulations. If a field expedient is justified, an undercut at a 45 degree angle should be made to prevent rain from entering the exhaust pipe when the equipment is not in operation.

FOR THE COMMANDER:

RICHARD E. TAYLOR
1LT, AGC
Assistant Adjutant

Copies Furnished:
CO, 79th Engr Gp
CO, 588th Engr Bn

23

AVHGC-DST (15 May 68) 3d Ind CPT Arnold/dls/LBN 4485
SUBJECT: Operational Report - Lessons Learned (RCS-CSFOR-65) for the Quarterly Period Ending 31 April 1968

HEADQUARTERS, US ARMY VIETNAM, APO San Francisco 96375 19 JUN 1968

TO: Commander in Chief, United States Army, Pacific, ATTN: GPOP-LT, APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 30 April 1968 from Headquarters, 588th Engineer Battalion (Combat).

2. Concur with report as submitted.

FOR THE COMMANDER:

JOHN V. GETCHELL
Captain, AGC
Assistant Adjutant General

Cy furn:
HQ 20th Engr Bde
HQ 588th Engr Bn (Const)

24

GPOP-DT (15 May 68) 4th Ind
SUBJECT: Operational Report of HQ, 588th Engr Bn (Cbt) for Period Ending 30 April 1968, RCS CSFOR-65 (R1)

HQ, US Army, Pacific, APO San Francisco 96558 8 JUL 1968

TO: Assistant Chief of Staff for Force Development, Department of the Army, Washington, D. C. 20310

This headquarters has evaluated subject report and forwarding indorsements and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:

C.L. SHORTT
CPT, AGC
Asst AG

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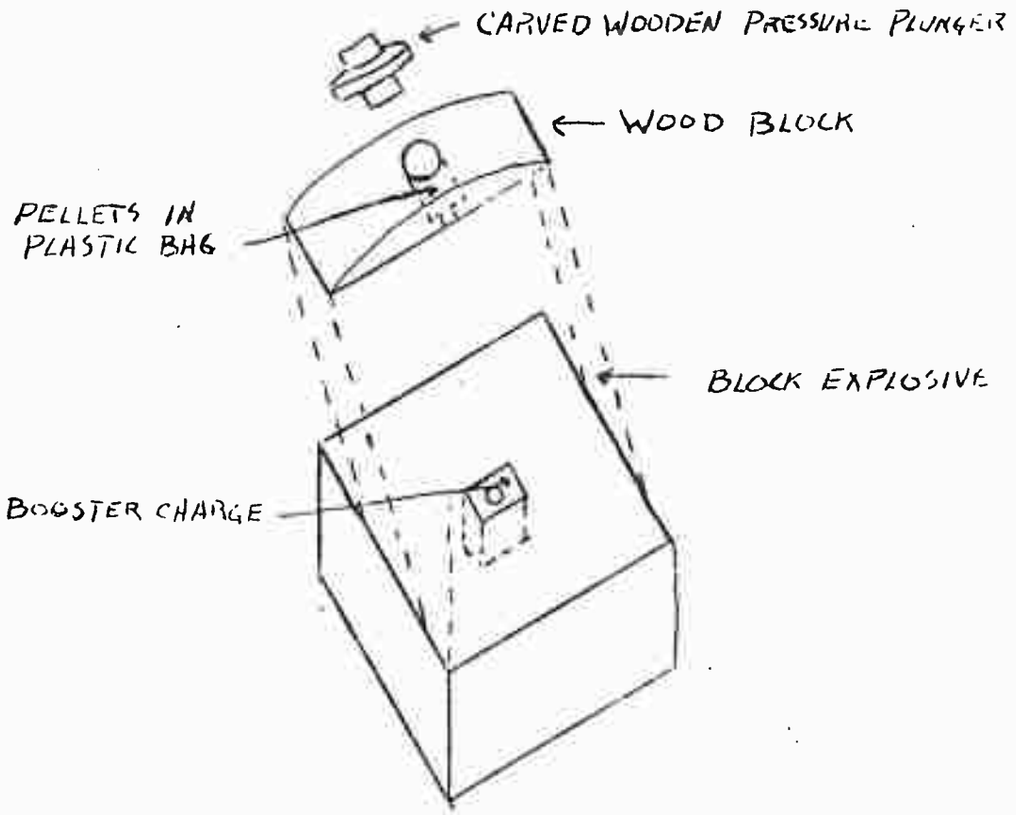
22 POUND BLOCK EXPLOSIVE MINE

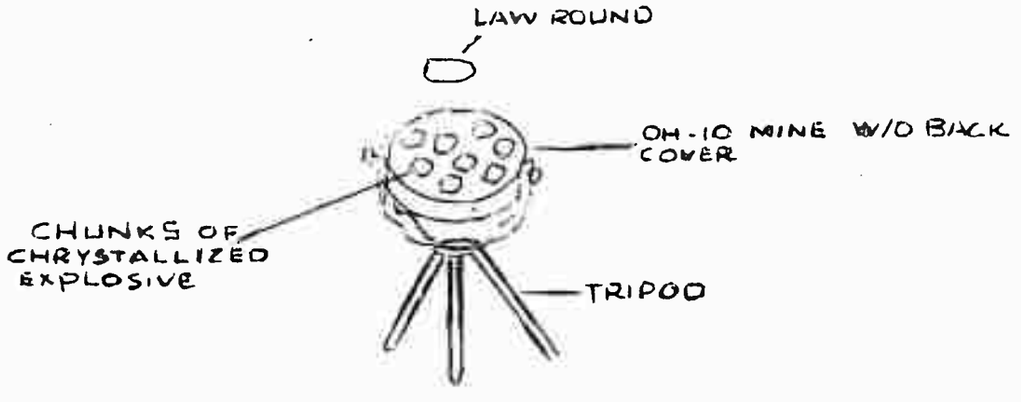
This mine was found on Route LTL 26 at XT 338458 on 28 April near a culvert that was blown the night before. The mine and fuse are non-metallic and were detected visually. Pressure on the activating device forces it into a small plastic bag containing three pellets of unknown composition. The bag fits against a cylindrical cardboard tube and a wrapped booster charge inside waxed cardboard. The mine was a locally formed block of molded crystallized osplosive painted OD and weighing 22 pounds.



INCLOSURE 1

HOMEMADE CULVERT MINE

This mine was found inside a culvert on Route 239 on 30 April. The mine was constructed of a standard VC DH-10 Directional mine tripod and mine body minus the front, crystallized explosive in chunks filling the empty mine, a booster charge in a plastic bag, and an M-72 (LAW) round placed on top of the mine. No detonating device or firing wires were found. The mine was removed from the culvert and an attempt was made to detonate the mine. The explosive would not detonate and the mine was evacuated for study.



INCLOSURE 2

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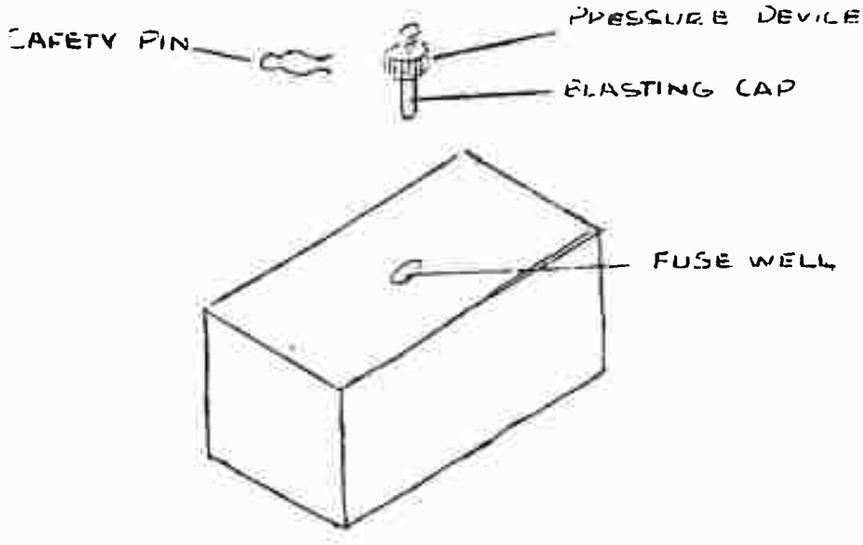
18 POUND BLOCK EXPLOSIVE MINE

Two of these mines were detected visually a short distance south of Tay Ninh Base Camp on the convoy road. A mine at the same location had killed and injured several Vietnamese several days earlier. These mines were dug into a recently repaired section of the road and covered with rock. The fuse was a blasting cap with a home made pressure device and no booster charge. The mine itself was similar to the 22 pound mine. The mine body was composed of molded explosive. The safety device was found under the mine.



INCLOSURE 3

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 588TH ENGINEER BATTALION (C)(A)
APO SF 96216

EBB-3 28 March 1968

SUBJECT: After Action Report - Operation Yellowstone

Commanding Officer
79th Engineer Group
ATTN: EGE-3
APO SF 96491

1. Resume: Operation Yellowstone was scheduled as a 25th Infantry Division operation to make heavy penetrations into War Zone C in northern Tay Ninh Province, Republic of Vietnam. In conjunction with this mission Task Force 588th Engineer Battalion was placed in direct support of the division to build two CIDG/ SF camps and associated airstrips and to upgrade LOC's throughout War Zone C. The operation was originally planned as a 120 day field operation and was later scaled down to 80 days total. The 1st and 3d Brigades were the primary participating units as well as other divisional units.

2. Commanders and Dates:

a. Commanders:

Task Force 588th Engineer Battalion: LTC Frederick G. Rockwell Jr.
SGM Edward J. Kirby

Note: LTC Coleman C. Clement assumed command of the battalion on 20 February 1968.

Headquarters Company: 1LT Hal B. Mathieson (to 25 Jan)
1LT Andrew C. Lattu (from 26 Feb 68)

Company A: CPT Andrew B. Seidel

Company B: CPT John T. Hardy Jr. (to 6 Feb 68)
1LT Timothy Richards (from 6 Feb 68)

Incl 4

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SUBJECT: After Action Report - Operation Yellowstone

Company C: CPT John C. Whisler (to 31 Dec 67)
CPT Charles F Porter Jr. (from 1 Jan 68)

Company D: CPT Larry M. Pigue

362d Engineer Company (LE): CPT David G. Wiese

104th Engineer Company (DT): 1LT Jay D. Stone

1st Platoon: 1LT Gerald V. Rutland

2nd Platoon: 1LT James T. Bridges Jr.

500th Engineer Company (PB)

Platoon Leader: 2LT Robert T. Jones Jr.

b. Dates:

(1) Preoperation road work: 18 Nov 67 to 2 Dec 67.

(2) Operation Yellowstone: 8 Dec 67 to 24 Feb 68.

3. Location:

a. Company B, one section from the 362d Engineer Company (LE), and one platoon from the 104th Engineer Company (DT) were located at the following positions:

(1) Fire Support Base Bliss (XT 288635) from 18 Nov 67 to 26 Nov 67.

(2) Ap Loc Ninh (XT 395632) from 27 Nov 67 to 2 Dec 67.

(3) French Fort (XT 282680) from 11 Dec 67 to 9 Feb 68.

(4) Company B (with Company A) was located at Thien Ngon (XT 085816) from 13 Feb 68 to 23 Feb 68.

b. Headquarters, Task Force 588th Engineer Battalion, Headquarters and Headquarters Company (-), Company C (-), Company D, one platoon each from the 362d Engineer Company (LE) and the 104th Engineer Company (DT) were at Katum (XT 333899) from 9 Dec 67 to 17 Feb 68. One platoon from the 500th Engineer Company (PB) stayed at Katum from 9 Dec 67 to 15 Dec 67.

c. Company A, two platoons of 362d Engineer Company (LE), and the equipment platoon of Headquarters and Headquarters Company were at Thien Ngon (XT 085816) from 9 Dec 67 until 23 Feb 68.

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4. Command Headquarters:

Task Force 588th Engineer Battalion field headquarters was located at Katum; Battalion units maintained a minimum of administrative personnel in Tay Ninh and Dau Tieng throughout the operation. The company headquarters were in the field as indicated above.

5. Task Organizations:

a. Organic units:

(1) Headquarters and Headquarters Company, 588th Engineer Battalion (Combat) (Army)

(2) Company A, 588th Engineer Battalion (Combat) (Army)

(3) Company B, 588th Engineer Battalion (Combat) (Army)

(4) Company C, 588th Engineer Battalion (Combat) (Army)

(5) Company D, 588th Engineer Battalion (Combat) (Army)

(6) 362d Engineer Company (Light Equipment)

b. Attachments:

(1) Two platoons from the 104th Engineer Company (DT). One platoon was attached from 4 Dec 67 to 9 Feb 68. The other platoon was attached from 7 Dec 67 to 17 Feb 68.

(2) One platoon from the 500th Engineer Company (PB) from 6 Dec 67 to 15 Dec 67.

(3) One section (two 105mm howitzers) from C Battery, 6/77th Artill

(4) The following equipment with operators was attached from the 65th Engineer Battalion:

(a) 2 medium tractors

(b) 2 bucket loaders

(c) 1 AVLB

(d) 1 M48A2 tank dozer

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(5) The following equipment with operators was attached from the 101st Airborne Division: 1 front loader, 2 each D6 tractors, and 1 grader.

c. Detachments: None

d. Supporting Forces:

(1) 1st Brigade, 25th Infantry Division, with attached units

(2) B-32d US Special Forces

(3) CIDG and Mike Force companies

6. Intelligence:

a. Terrain, Vegetation and Soil: The terrain in the Katum, Thien Ngon, French Fort area is gently sloping from north to south. Streams were high at the start and decreased as the dry season progressed. The area is generally covered with dense, triple canopied jungle containing broad leaved trees 80 to 120 feet high. The area between Tay Ninh and Katum had been partially defoliated. Soils are moderately stable, supporting military traffic when dry. Dust is a major problem for convoy movements.

b. Enemy Forces: The 271st NVA Infantry Regiment, 141st NVA Infantry Regiment, and the 69th Artillery Command were operating in the area, along with several other supporting battalions and companies.

7. Mission: To upgrade and repair Route TL4 and to keep this MSR open between Tay Ninh and Katum; to construct CIDG Special Forces camps at Katum and Thien Ngon; to construct a Type II C-123 airstrip at Thien Ngon; to repair and upgrade the existing Katum airstrip to a Type II C-130 rating.

8. Concept of Operation:

a. Company B (augmented with one equipment section of 362d Engineer Company) make necessary repairs and improvements during the period 18 November through 2 December on route TL4 between Nui Ba Den and French Fort to permit military convoy movement. During the period 2 through 7 December upgrade Route 13 between Soui Da and Loc Ninh (XT 396632). Displace to French Fort ASAP after 8 December to upgrade Route 4 from Nui Ba Den to Prek Klok (XT 273778) during the period of the operation.

b. Task Force 588th Engineer Battalion (-):

(1) Task Force: Displace to Katum by convoy on 7 to 8 December. Establish Task Force Headquarters at Katum upon arrival.

(2) Company D make airmobile insertion into Katum on 8 December with engineer equipment and personnel to initiate upgrading of airstrip. Remainder of company to convey to Katum on 7 to 8 December. Complete construction of airfield and parking aprons. Construct CIDG/ SF camp at Katum as required.

(3) Company C displace to Katum by convoy on 7 to 8 December. Establish defensive positions at Katum. Initiate upgrading of Route 4 to Prok Klok and Route 246 to Bo Tuc (XT 380857).

(4) 104th Dump Truck Company: One platoon to be attached to Company B at French Fort. One platoon to attached to Task Force Headquarters at Katu Assist in LOC upgrading mission as required.

(5) 500th Panel Bridge Company Platoon: Assist in convoy movement to Katum on 7 to 8 December. Provide bridging and technical assistance to emplace DS Bailey Bridge at XT 333899. Return to parent unit upon completion

c. Company A (augmented with one section, 362d Engineer Company and equipment platoon, 588th Engineer Battalion) make convoy movement to Thien Ngon (XT 085816) on 8 December. Set up defensive positions in conjunction with CIDG/SF units. Initiate construction of CIDG/SF camp and of Type II C-123 airfield.

d. All Task Force units be prepared to react to changes in operation caused by enemy action. All Operation Yellowstone missions to be completed in sixty days.

9. Execution:

a. Pre-operation Road Work: During the period 18 November through 2 December, Company B and attachments cleared and upgraded Route TL4 from XT 249598 to XT 279690, Route 243 from XT 284618 to XT 335577, and Route LTL 13 from XT 347585 to XT 397632.

b. Katum Special Forces Camp and Airfield: On 9 December, Company C, Company D, Headquarters and Headquarters Company, one platoon each from 362d Engineer Company (LE), 500th Engineer Company (PB), and the 104th Engineer Company (DT) arrived at Katum. The existing airfield was repaired and upgraded and received C-130 traffic starting on 16 Dec 67. The airfield was fully completed on 15 February 1968 with the construction of two C-130 parkir areas and one large helicopter parking area. The CIDG/Special Forces camp was completed on 17 February 1968. Task Force elements returned to Tay Ninh on 12, 18 and 22 February.

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c. Thien Ngon Airstrip and CIDG/Special Forces Camp: Company A with attachments arrived at Thien Ngon on 9 December. The Special Forces Camp and the airfield constructions were completed on 22 February 1968. The surface treatment of the airfield was completed on 17 March 1968. Company B provided additional security at Thien Ngon from 13 through 23 February 68.

10. Results:

a. Enemy personnel losses: Unknown

b. Friendly personnel losses: 137 WIA, 1 MIA, 8 KIA. The majority of the casualties were from mortar and rocket attacks and from land mines. In addition, two light enemy ambushes on Route 4 and two heavy enemy ambushes on Route 22 (10 and 15 February) accounted for six of the KIA, one captured and many of the wounded.

c. Enemy equipment captured: Two B-40 rockets and several enemy mines and firing devices were recovered.

d. Friendly equipment losses: Four 5-ton dump trucks; one 5-ton tractor one 3/4 ton truck; one 29CM scraper; three 2½ ton trucks; one D7E dozer; two attached APC's; two ¼ ton trucks; one entrenching machine. Most equipment was lost by detonating mines or when hit by RPG rounds. 23 vehicles detonated mines during the operation.

e. Enemy Facilities destroyed:

(1) Several enemy mines and booby-traps were recovered or studied before being blown in place. Sketches and descriptions of these mines are found in the quarterly ORLL submitted 14 February 1968. Most mines were of foreign manufacture or were homemade.

(2) One enemy tunnel complex was destroyed at Katum and several enemy bunkers were destroyed at Thien Ngon.

f. Significant Engineer Accomplishments:

(1) 26,000 meters of road were swept for mines daily during the operation.

(2) 140 enemy mines were detected. 135 were BIP and 5 were received for study.

(3) 26,000 meters of road were repaired, upgraded and kept open daily.

(4) 90,000 cm of laterite were extracted and used for LOC upgrading and repairs, airfield upgrading and construction, and Special Forces camp construction.

(5) CIDG/Special Forces Camps were built at Katum and Thien Ngon.

(6) A C-123 Type II airfield 2500 feet long was constructed at Thien Ngon.

(7) A C-130 Type II airfield 3000 feet long was constructed at Katum. Taxiways and parking areas were constructed.

(8) One 80 foot DS Bailey Bridge was emplaced at XT 333899 on Rt TL4 and later replaced with a timber trestle bridge. AVLB launching site was constructed for future operations.

(9) A natural log bridge was constructed at XT 307850 on Route TL4, and an AVLB launching site was built 200 meters upstream.

(10) A natural log bridge was built at XT 337894 on Route 246.

(11) 120,000 gallons of asphalt products were spread on airfields, parking areas and roads, for surface treatment and dust control.

(12) 260,000 gallons of water were spread on roads for dust suppressi

(13) 1,500 acres were cleared for fields of fire.

(14) AVLB's were used frequently at four locations.

(15) 3300 cm of rock were hauled and emplaced on LOC's.

(16) Ten culverts were placed.

11. Administration and Logistics:

a. Administration:

(1) Courier: A Courier was utilized for daily distribution and mail deliver between 79th Engineer Group and the 588th Engineer Battalion. A helicopter was used by the battalion daily for reconnaissance and for command and control.

(2) Casualty Reporting: Information was furnished to the Battalion Administration Section at Tay Ninh for report preparation and forwarding.

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(3) Chaplain: The Battalion Chaplain visited the field locations weekly for services and counseling.

(4) Promotions and Awards: Recommendations for promotions were processed and forwarded to the battalion rear. Promotion boards were held in the field. Several on-the-spot awards were made in the field.

(5) Pay: Class A agents visited the field to pay personnel. Money orders were made available to personnel in the field locations.

(6) Communications: A battalion net control FM station was established at Katum. The battalion station remaining at Tay Ninh and the battali relay on Nui Ba Den were capable of reaching all battalion units. Telephone contact between Katum and Tay Ninh were established by VHF relay.

b. Logistics:

(1) French Fort: Resupply posed no significant problems because of the proximity of Tay Ninh Base Camp. The water point supplied 4,400 gallo daily.

(2) Katum:

(a) POL and Ammunition were drawn from 1st Log facilities at Katum. Occasional shortages of RC-800 or diesel and other individual items occurred. POL and Ammo arrived almost daily by convoy.

(b) A Rations and Sundry Packets were drawn from 1st Log at Katum after the fifth day. C Rations were used until that time. Ice was usually flown in daily. Beer and soda were occasionally available through 1st Log but were more often supplied by battalion units.

(c) Extensive barrier and bunker materials were carried by the battalion in the initial convoy. Resupply by helicopter was used for the battalion until these materials became available from 1st Log.

(d) Due to failure of the Special Forces to make construction materials for the camp available many of these supplies came from the 588th Engineer Battalion S-4 yard. Some of the electrical and plumbing materials were never supplied.

(e) The water point at Katum produced 14,000 gallons daily.

(f) A 1st Log quartermaster laundry point was in operation at Katum.

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(3) Thien Ngon: All materials were flown in by CH-47 helicopters. Much of the construction materials for the Special Forces camp came from the battalion S-4 yard due to inability of the Special Forces to supply the materials. The water point produced 4,000 gallons daily.

12. Special Equipment and Techniques:

a. Mine detection: The thick dust on roads enabled the VC to plant and camouflage mines. Applying RC-3/Diesel daily to the roads alleviated the dust problem and made it possible to detect the mines visually, since any disturbance of the treated surface was evident.

b. Clearing booby-traps: It was discovered that part of the area to be cleared for the Katum fields of fire had been booby-trapped. An armored personnel carrier mounted with a flame thrower was used to burn the area to neutralize all booby-traps without risk to personnel.

c. Timber cutting charges: In land clearing, a means of placing intern demolition charges in native trees greater than 3 feet in diameter was needed. Shaped charges made from number 10 cans were easily fabricated and were effective in blowing a hole for placing internal charges.

d. Natural log bridges: Two bridges near Katum were constructed of locally available logs 2 to 3 feet in diameter. These bridges released two AVLB's for other use and also eliminated the necessity for daily launching an extraction. It was originally thought that the VC would not blow these brid because of the large amount of explosives necessary to cut logs of this size. However, one bridge was blown after the operation on 16 March 1968.

e. Airstrip surface repair: The use of soil binder, 1½ inch (minus) r and laterite was found to make an excellent patch material for airfield potholes.

f. Position Markers: Number 10 cans filled with a gasoline and sand mixture were placed behind each perimeter bunker to be lit for marking the perimeter in case of a night air strike. Three 55-gallon drums per company with a gasoline and sand mixture were placed near the perimeter wire, to be fired and used for marking air strikes. They were primed with electric blast ing caps.

g. Tire pressure: During the first two weeks of Operation Yellowstone Company B's flat tire rate was 8.5 flats per day due to the many artillery fragments on the road. Prior to the operation, the rate was 4.5 to 5 per day By lowering the tire pressure from the normal 70 psi to 40-45 psi, the flat tire rate dropped from 8.5 to 2.5 and remained between 2.5 and 3 per day for rest of the operation.

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h. Mine sweep teams: By keeping the same mine sweep personnel on a specific section of the road their efficiency was greatly increased. After several days the men become familiar with the road and the techniques the VC used in planting and camouflaging mines. Visual detection was made by noting irregularities in tire tread marks, areas that appeared to be smoothed by hand and discoloration of the road surface.

13. Commander's Analysis and Lessons Learned:

a. Rome Plow Clearing: The simplest method in using Rome Plows is to have each operator clear his own path. This method is somewhat unproductive because of maneuvering for repeated cuts. If one or more plows work behind the lead plow as clean-up plows, they can each make a pass at difficult trees or dense foilage and eliminate it without wasteful backing or maneuvering. Production has increased at least one acre per plow per day using this techni

b. Rome Plow Fires: Debris falling into the belly pan of Rome plows during clearing operations resulted in several fires. Access to the belly pan is restricted, requiring large amounts of water to be used in extinguishi the fire. In the field it was desirable to centralize operations around a water source for this purpose. If one was not available a water trailor was made available at the job site.

c. CIDG Security: The performance of CIDG troops when used as security for engineer missions was considered unsatisfactory. The CIDG troops gather into groups to talk, sleep, eat or fish rather than to maintain their securit positions; few understood English; and they were continually firing their weapons. They would leave their positions while the engineers were still working, leaving them without security. The engineer unit must augment CIDG security with unit security personnel.

d. Concrete Design: The local water at Katum contained some substance which retarded or neutralized the chemical reaction in 1-2-3 cement mix when using a 5 to 1 water to cement ratio, resulting in a significant strength l This effect was reduced by changing the proportions to 2-2-3 (cement, sand and aggregate) and the cement then hardened. There was still a loss of stre but it was not as great.

14. Recommendations:

a. Rome Plow Cabs: The Rome plow cabs are not adequately braced and t to sway and break at mounting points. Recommend cabs have bracing installed diagonally from the vertical posts to the top cross members for greater oper ator safety and reduced maintenance time.

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b. Rome Plow Radios: The Rome plow operator hears the noises of his engine and his vision is limited by the wire cage which is usually covered with vegetation. Recommend that plows have an AN/PRC 25 radio mounted for control purposes and to warn operators of attack.

c. Trunion pins: The hard pan laterite in the laterite pit required the use of the D7E ripper teeth. The trunion pins on the ripper teeth broke frequently, and resupply of pins was very slow. Recommend the PLL for trunion pins be increased, or a special authorization for an additional supply of pins be allowed.

FOR THE COMMANDER:

James L. Michlewski

JAMES L. MICHLEWSKI
1LT, AGC
Adjutant

Inclosures:

1. Thien Ngon Overlay
2. Katum Overlay

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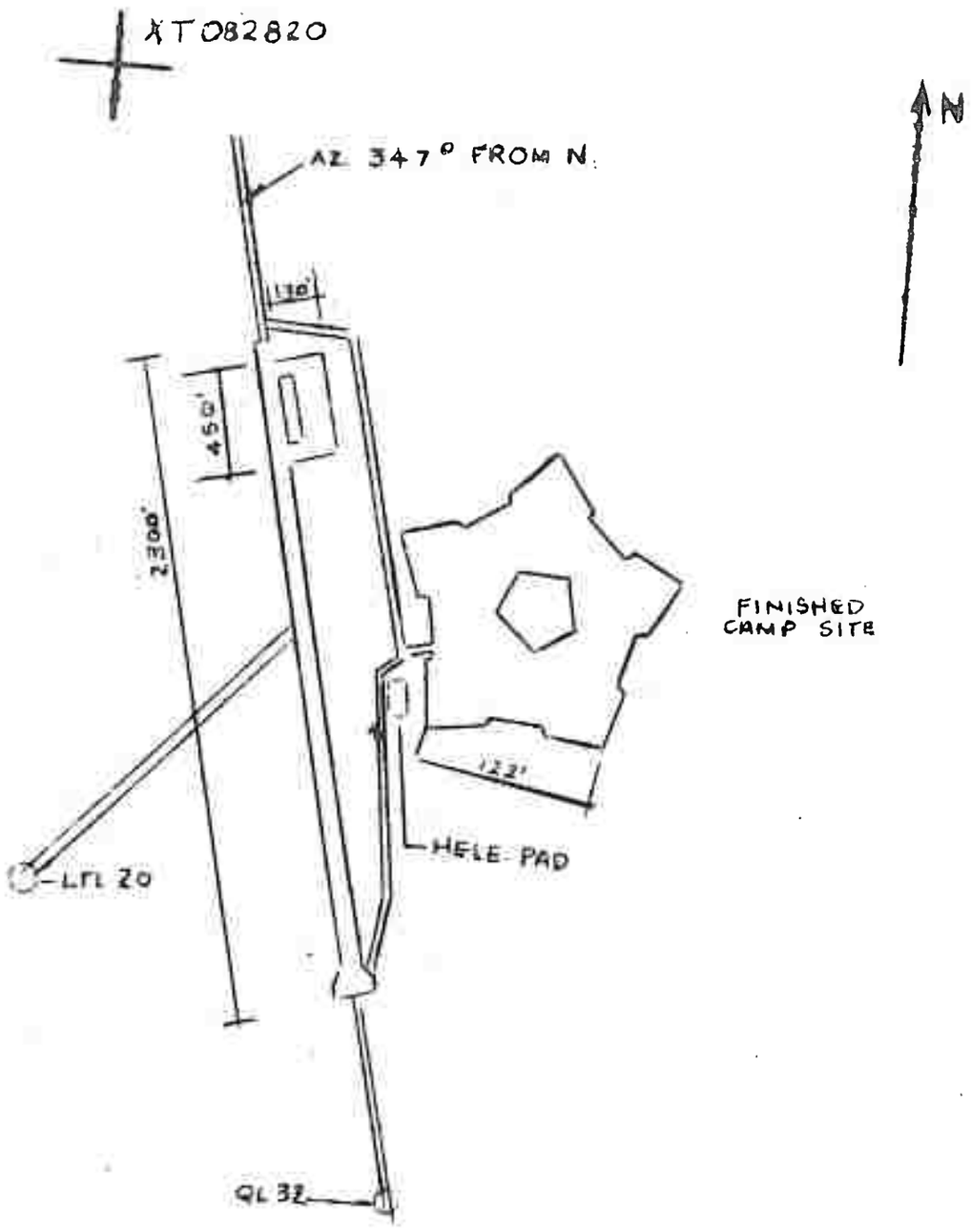
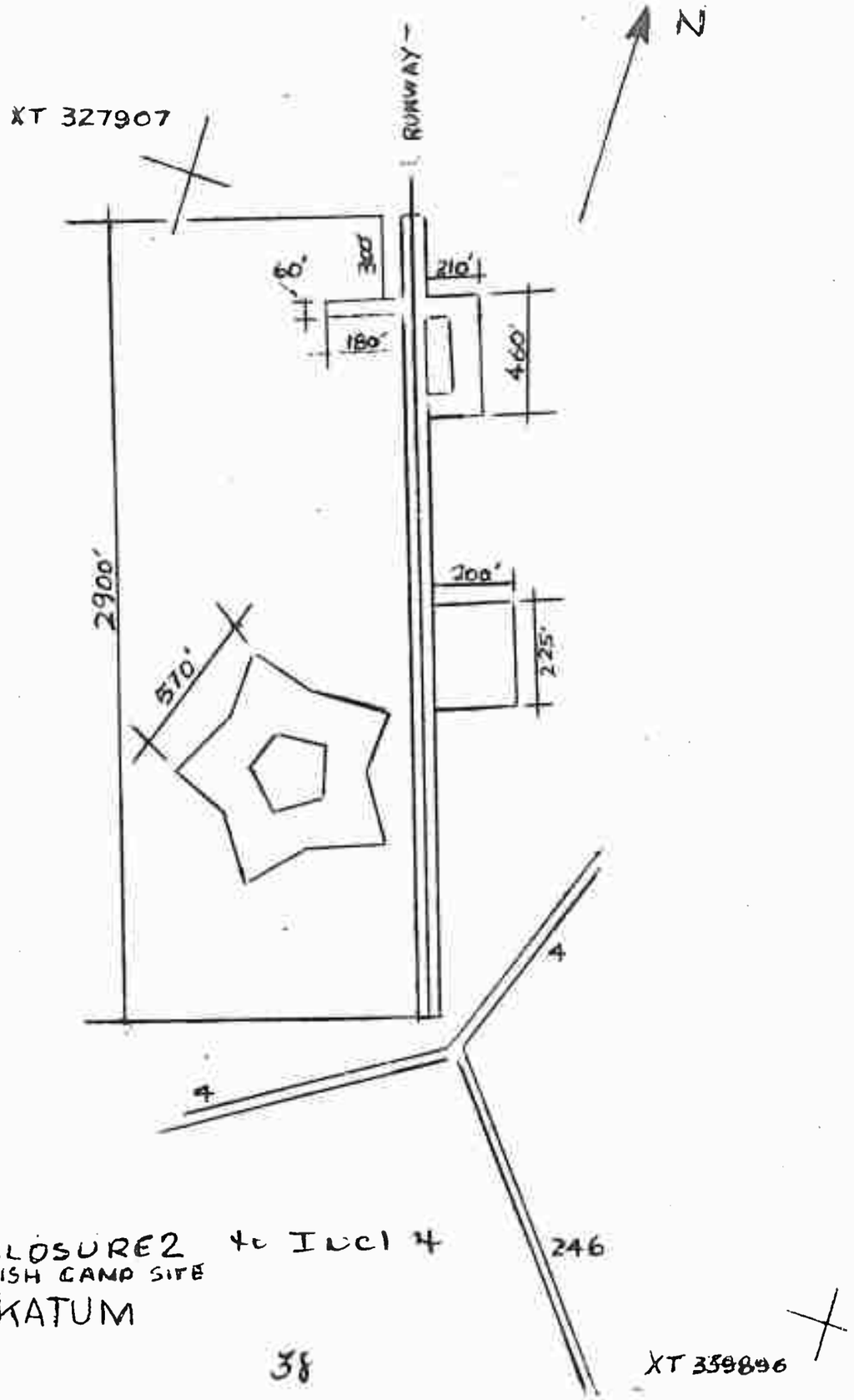


Incl 1 To Incl 14



INCLOSURE 2 to Incl 4
FINISH CAMP SITE
KATUM

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Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) OACSFOR, DA, Washington, D.C. 20310	2a. REPORT SECURITY CLASSIFICATION For Official Use Only 2b. GROUP

3. REPORT TITLE

Operational Report - Lessons Learned, Headquarters, 588th Engineer Battalion

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Experiences of unit engaged in counterinsurgency operations, 1 Feb - 30 Apr 1968 (U)

5. AUTHOR(S) (First name, middle initial, last name)

CO, 588th Engineer Battalion

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
15 May 1968	39	

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO. N/A	682116
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d.	

10. DISTRIBUTION STATEMENT

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
N/A	OACSFOR, DA, Washington, D.C. 20310

13. ABSTRACT

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DD FORM 1 NOV 1473

UNCLASSIFIED
Security Classification